

# Study: Fiber intake reduces cognitive decline risk in older people with apolipoprotein $\epsilon 4$ allele

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Fiber intake is associated with a lower risk of developing cognitive decline in those old people with the apolipoprotein E ApoE  $\epsilon 4$  genotype,

regarded as a genetic risk factor linked to the development of Alzheimer's disease. This is stated in a study conducted by the Research Group on Biomarkers and Nutritional and Food Metabolomics of the Faculty of Pharmacy and Health Sciences of the University of Barcelona and the CIBER on Fragility and Ageing (CIBERFES).

The study, published in the journal *Age and Ageing*, is led by Professor Cristina Andrés-Lacueva, from the Institute on Nutrition and Food Safety Research (INSA-UB), the Food and Nutrition Torribera Campus of the UB and CIBERFES. It is based on the InCHIANTI project, a study carried out in 1,139 adults aged over 65 in two areas of Tuscany. In particular, the study included 848 volunteers (56% were women), of an average age of 74, to study their [diet](#), [cognitive state](#) and other health parameters every three years, for fifteen years.

## **Apolipoprotein E: Different genetic variants**

Apolipoprotein E (ApoE) is a multifunctional protein synthesized and secreted by several cells (hepatocytes, adipocytes, etc.). the ApoE gene, which in humans is found in the chromosome 19, is a polymorphic one and has three codominant alleles ( $\epsilon 2$ ,  $\epsilon 3$  i  $\epsilon 4$ ) which lead to different haplotypes or genetic variants.

"Cognitive decline, precursor of the development of dementia in old people, is currently a public health problem without treatment. This is why it is crucial to detect modifiable risk factors that allow us to develop prevention strategies, among which the diet has proved to be one of the most efficient," notes Tomàs Meroño (UB-INSA-CIBERFES), one of the authors of the study.

"Evidence shows that healthy diets, characterized by a high consumption of fiber-rich foods, have a positive impact on cognition, but the specific role of fiber intake plays on the cognitive function is still unknown."

Cristina Andrés-Lacueva notes that "in participants with the ApoE  $\epsilon$ 4 haplotype, we see that an increase of five grams per day in the fiber intake is already associated with a 30% lower risk of [cognitive decline](#). This shows that an acceptable increase in the daily fiber intake can have an impact."

Moreover, the researchers note that this protecting association is limited to people who carry the ApoE  $\epsilon$ 4 haplotype. Regarding the participants with other genetic variants of the apolipoprotein E (ApoE  $\epsilon$ 2 and ApoE  $\epsilon$ 3), a higher fiber intake was not associated with a lower risk of cognitive decline.

"These results show that [old people](#) with the ApoE  $\epsilon$ 4 haplotype could benefit from a higher fiber intake, and it opens the door to study the interaction between the ApoE genotype and consumption, which has not been characterized to date," concludes researcher Andrea Unión (UB-INSA-CIBERFES), first author of the study.

**More information:** Andrea Unión-Caballero et al, Apolipoprotein E gene variants shape the association between dietary fibre intake and cognitive decline risk in community-dwelling older adults, *Age and Ageing* (2023). [DOI: 10.1093/ageing/afac329](https://doi.org/10.1093/ageing/afac329)

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